Recycling Energy Lost Due to Atmospheric Friction Within a Photomagnetically Supported Artillery Shell

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Introduction

In addition to other range-augmenting techniques previously proposed, it may be worthwhile to explore the possibility of, as efficiently as possible, recycling energy lost to friction with the atmosphere; particularly in the case of an artillery shell launched conventionally; back into additional propulsion applied by a photomagnetic system integrated into the shell.

Abstract

If a conventionally-fired artillery shell were equipped with not only a photomagnetic booster but also an energy-recycling system which would power the photomagnetic system by recycling friction energy (mostly pressure from the atmospheric drag, but also heat energy,) a portion of the kinetic energy lost to atmospheric drag could be recovered by converting that energy into electrical energy which could be applied toward photomagnetic thrust.

With the advent of new classes of piezo-electric materials which allow for the steady generation of electricity in response to uniform pressure or from torsion effects, a high percentage of the drag force acting upon an artillery shell could, in theory, be converted in this manner. As explored in previous publication, thermoelectric materials are, at their most fundamental, actually piezo-electric. This means that a single material could be used to convert both the heat energy associated with the friction as well as the pressure of atmospheric drag into electrical current.

Depending upon how much current may be generated, the range of such artillery systems could be greatly boosted without the already-conceptualized LASER boost system. Additionally, the energy conversion system could be used in conjunction with the LASER boost system.

Conclusion

In theory, if a value anywhere near 100% of the drag-associated energy loss could be converted back into forward kinetic energy, a conventionally-fired artillery shell would retain sufficient energy to enter the upper-atmosphere. Although, for a ballistic object to have truly unlimited range, it would need to achieve escape velocity, an energy-conversion mechanism which recoups what is lost to atmospheric drag would bring this the goal of unlimited-range artillery to within closer reach.